

Six New Species of Caddisflies from Tanzawa Mountain Mass, Kanagawa Prefecture, Japan

(Trichoptera, Insect)

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丹沢山塊より採集した毛翅目の新種について

1965年より丹沢山塊の水系に生そくする水生昆虫，特に毛翅目 *Trichoptera* の分布調査をおこなってきたが，神奈川博研報 Vol. 1, No. 2 に4新種を発表して以来，今日まで数種の新種を採集することができた。そこで研究の完了した6種を国際動物命名規約にしたがって新種として発表する，

① ナガレトビケラ科 *Rhyacophilidae* に属し，ナガレトビケラ属 *Rhyacophila* に属する2種を *Rhyacophila shiraishiensis* sp. nov., *Rhyacophila morokuboensis* sp. nov. と命名する。

② クダトビケラ科 *Psychomyiidae* に属し，*Tinodes* に属する1種を *Tinodes ashigarani* sp. nov., *Kibuneopsychomyia* に属する1種を *Kibuneopsychomyia tanzawaensis* sp. nov. と命名する。

③ エグリトビケラ科 *Limnophilidae* に属し，クロバネトビケラ属 *Moropsyche* に属する1種を *Moropsyche higoana* sp. nov. と命名する。

④ ケトビケラ科 *Sericostomatidae* に属し，マルツツトビケラ属 *Micrasema* に属する1種を *Micrasema genjiroensis* sp. nov. と命名する。 (小林 峯生)

In the present paper, I record six new species which collected by myself in Tanzawa Mountain Mass, Kanagawa Prefecture, Japan.

1. *Rhyacophila shiraishiensis* sp. nov. (Figs. 1-3)

Head blackish brown; dorsum of head with four pair warts; each warts with long black hairs. Ocell present. Antennae blackish brown, clothed with short blackish brown hairs, shorter than the length of anterior wing; the basal segment longer and thicker than the other segments. Maxillary palpi five-segmented, pale gray; the first two segments very short, with long brown bristles, the following segments long, cylindrical, with short brown hairs; the terminal segment not

articulated. Labial palpi gray, three-segmented, with short brown hairs; the first segment shorter than the following segments, the terminal segment slightly longer than the second one. Mesoscutellum blackish brown, without warts.

Anterior wing elongate, pale gray, clothed with short brown hairs; discoidal cell wanting, apical forks nos. 1, 2, 3, 4 and 5 present; R forked at its apex. Thyridial cell present, elongate; cross-vein *m-cu* and *r-m* hyaline. Median cell wanting. Anal cell short, intercostal vein present, but with no cross-vein s.

Posterior wing pale gray, clothed with short brown hairs, slightly narrower than anterior wing; discoidal cell wanting; apical forks nos. 1, 2, 3 and 5 present.

Legs pale gray, clothed with short brown hairs, spurs 3, 4, 4. Spurs blackish brown; the outer spurs of each legs shorter than the inner spurs.

Tergites blackish brown; sternites pale gray. The tenth segment blackish brown, divided two lobes; each lobes thumb-shaped, clothed with brown hairs. Clasper two-segmented, the basal segment long and thick, the terminal segment shorter and thinner than the basal one, thumb-shaped in lateral view.

Measurement: Holotype, body 6.5mm, anterior wing 7.5mm, posterior wing 6.5mm.

Holotype: Male (M. 2463) in alcohol; Shiraishizawa, Tanzawa Mountain mass, Kanagawa Prefecture; July 29, 1970; collected by M. Kobayashi.

Paratype: Three Male (M. 2463 a, 2463 b, 2466) in alcohol; Shiraishizawa, Tanzawa Mountain mass, Kanagawa Prefecture; July 29, 1970; collected by M. Kobayashi.

The specific name *shiraishiensis* came from the collected site.

2. *Rhyacophila morokuboensis* sp. nov. (Plate 2)

Head blackish brown; dorsum with three pair warts; a large triangular warts between the base of the antennae; warts pale gray, with long brown hairs. Ocelli present. Antennae shorter than the length of anterior wing, blackish brown, clothed with short brown hairs; the basal segment longer and thicker than the other segment; the second segment much short. Maxillary palpi pale gray, five-segmented; the first two segments very short, with long brown bristles; the third segment longer than the following segments; the fourth segment as long as the terminal one; the terminal segment not articulated. Labial palpi pale gray, three-segmented, with short brown hairs; the first two segments short, with bristles, the following segments long. Mesoscutellum blackish brown, without warts.

Legs pale gray, clothed with brown hairs; spurs 3, 4, 4. Spurs pale gray; the outer spurs shorter than the inner spurs; middle and posterior legs with pale brown bristles.

Anterior wing elongated, pale gray, clothed with short brown hairs; discoidal cell wanting, apical forks nos. 1, 2, 3, 4 and 5 present; R forked at its apex. Thyridial cell present, elongated; median cell wanting; anal cell short; intercostal vein

present, but without cross-vein *s*; cross-vein *m-cu* and *r-m* hyaline.

Posterior wing pale gray, clothed with short brown hairs, slightly narrower than the anterior wing; discoidal cell wanting; apical forks nos. 1, 2 and 5 present; apical fork no. 3 with long handle.

Tergites blackish brown; sternites pale gray. Tergites of the ninth segment flat and wide at its apex. The tenth segment divided two lobes; each lobe elongate, the basal portion thinner than the apical. Clasper with the apical segment short; from the side, with a triangled excision of the upper margin leaving a broad, distally directed hook above and projecting lower part whose inner surface is thickly set with short seta; a strong process to the seventh, and a wide, feeble process or ridge at the center of the sixth central segment.

Measurement: Holotype, body 7.1 mm, anterior wing 9.3 mm, posterior wing 8.0 mm.

Holotype: Male (M. 2464) in alcohol; Morokuboza, Tanzawa Mountain mass, Kanagawa Prefecture; July 29, 1970; collected by M. Kobayashi.

This species closely resembles *R. articulata* in color and structure of the venation of the both wings, but distinguished from the latter by the structure of the male genitalia.

The specific name *morokuboensis* came from the collected site.

3. *Tinodes ashigarani* sp. nov. (Plate 3)

Head blackish brown, with a pair of elongate warts. Antennae yellowish brown, not longer than the anterior wing; the basal segment shorter than the length of head. Ocelli absent. Maxillary palpi yellowish brown, five-segmented; the third segment longer than the second one. Labial palpi yellowish brown, three-segmented; the second segment shorter than the basal and apical one, the terminal segment is articulated.

Pronotum with a pair warts; warts rounded, with long hairs; mesoscutum and postnotum of mesothorax without warts; mesoscutellum with a pair warts.

Legs yellowish brown, clothed with brown hairs; spurs 2, 4, 4. Spurs of anterior leg shorter than the spurs of the other legs; the outer spurs of each leg shorter than the inner one.

Anterior wing yellowish brown, densely pubescent; discoidal cell closed, small; median cell present, elongated; cross-veins *r-m* and *m* hyaline. Apical forks nos. 2, 3, 4 and 5 present. In anterior wing there is a cross-vein on Sc and R₁.

Posterior wing shorter and narrower than anterior wing; apical forks nos. 2, 3 and 5 present; discoidal cell absent; costa curved the outside at middle portion.

Abdomen yellowish brown. Dorsal plate long and slender, as long as the length of superior appendage. Superior appendage much long and slender, clothed with hairs. Penis sheath about two-thirds as long as superior appendage, the

apex pointed. Inferior appendage two-segmented; the basal segment thick; the terminal segment divided two lobes; the inner lobe longer than the outer lobe, rounded at its apex; the inner lobe slightly longer than the outer lobe.

Measurement: Holotype, body 3.5mm, anterior wing 5.0 mm, posterior wing 3.5 mm.

Holotype: Male (M. 2183) in alcohol; Hokisawa, Yamakita-machi, Ashigarakami-gun, Kanagawa Prefecture; May 18, 1967; collected by M. Kobayashi.

This species closely resembles *Tinodes miyakonis* in the venation of the both wings, but is distinguished from the latter the structure of the male genitalia.

This specific name *ashigaranis* came from the collected site.

4. *Kibuneopschomiya tanzawaensis* sp. nov. (Plate 4)

Dorsum of head blackish brown, with three pair of elongate warts; a large triangular wart between the base of the antennae; warts pale ochreous, clothed with blackish brown hairs. Ocelli absent.

Antennae pale ochreous, as long as the anterior wing, clothed with blackish brown hairs; the basal segment longer and thicker than the other segments. Maxillary palpi five-segmented, pale ochreous, clothed with blackish brown hairs; the basal segment slightly shorter than the second. The third segment as long as the length of the second one, the fourth segment three times of the third, the terminal segment articulated, flexible, longer than the third one. Labial palpi three-segmented, pale ochreous, clothed blackish brown; the basal segment as long as the second one, the terminal segment much longer than the other ones, about three times of the second.

Pronotum blackish brown, with a pair warts; warts small, pale ochreous, clothed with blackish brown hairs; mesoscutum blackish brown, with a pair of elongate warts; warts blackish brown, with long blackish brown hairs; mesoscutellum blackish brown, with a large triangular wart; pronotum and postnotum blackish brown, without hairs.

Legs ochreous, clothed with blackish brown hairs; spurs 2, 4, 4. Spurs ochreous, clothed with blackish brown hairs, the inner spurs much longer than the outer one; claw brown, thin.

Anterior wing pale ochreous, narrow, densely pubescent. Discoidal cell elongated. Apical forks nos. 2 and 4 present. Thyridial cell present, elongate, as long as the length of discoidal cell. Apical fork no. 2 without footstalk. The apical fork no. 4 with long footstalk.

Posterior wing pale ochreous, shorter and narrower than the anterior wing, densely pubescent. Apical forks nos. 2, 3 and 5 present; apical forks nos. 2 and 3 without footstalk; discoidal cell absent.

Abdomen densely pubescent; tergite and sternite blackish brown; pleurites

narrow, pale ochereous. The ninth segment blackish brown, the basal portion broad; the apical margin deeply emarginate in the dorsal view, with marginal bristles. The tenth segment pale ochereous, elongate, divided two lobes; the lobes cowl-shaped. Superior appendage blackish brown, elongate, the inner side with bristles, broad in the lateral view, leaf-like. Clasper two-segmented, the basal segment pale ochereous, stout, longer than the terminal segment; the terminal segment cowl-shaped in the lateral view, the lower margin black in color; the inner side with a pair process.

Measurement: Holotype; body 3.5mm, anterior wing 6.0mm, posterior wing 5.0 mm.

Holotype: Male (M. 2038) in alcohol; Genjiro-no-sawa, Tanzawa Mountain mass, Kanagawa Prefecture; May 24, 1968; collected by M. Kobayashi.

Paratype: Three Males (M. 2079, 2086, 2115) in alcohol; Genjiro-no-sawa, Tanzawa Mountain mass, Kanagawa Prefecture; May 24, 1968. One Male (M. 2015) in alcohol; Akusawa, Yamakita-machi, Ashigarakami-gun, Kanagawa Prefecture; May 17, 1967; collected by M. Kobayashi.

The new species closely resembles *K. kibuneana* in size and the venation of the both wings, but is distinguished from the later by the shape of the structure character of the male genitalia.

The present species is the second record of the genus *Kibuneopsycomia* from Japan.

The specific name *tanzawaensis* came from the collected site.

5. *Moropsyche higoana* sp. nov. (Plate 5)

Dorsum of head blackish brown, the vicinity of the antennae pale yellow, with a pair of triangle warts and a second smaller pair posterolateral from these; a pair of triangle warts between the base of the antennae; a pair of smaller warts nearly egg-shaped. Face blackish brown, with numerous warts; warts with a few blackish bristles. Antennae pale yellow, longer than the length of the anterior wing; the basal segment stout, long; the second segment thinner and shorter than the basal one; the each ones of the remaining segments as long as the basal one.

Maxillary palpi three-segmented, yellowish gray, clothed with yellowish gray hairs, the basal segment with a few blackish brown bristles, shorter than the other ones, the second segment about four times of the length of the basal one, the remaining segments as long as the length of the second one. Labial palpi yellowish gray, three-segmented, clothed with short hairs; the basal segment with a few brown bristles.

Legs delicate, spurs blackish brown, 1, 3, 4; pleuron and coxa blackish brown, coxa with a few blackish brown hairs; femur pale blackish brown, the apical por-

tion with a blackish spines, tibia and tarsus yellowish gray.

Anterior wing narrow, sparsely blackish brown haired, the basal portion of costa with much longer hair band; hair band blackish brown; the hind margin with a few long hairs; subcost running into costa, discoidal cell slender; apical forks nos. 1, 2, 3 and 5 present; apical fork no. 1 not reaching the discoidal cell with pedicel; apical forks nos. 2, 3 and 5 and without pedicel.

Posterior wing sparsely blackish brown haired; discoidal cell open; apical forks nos. 1, 2, 3 and 5 present; apical forks nos. 1, 3 and 5 with pedicel.

Tergite of abdomen blackish brown, with a few long hairs; sternite pale brown. The ninth segment blackish brown, the apical margin deeply concaved at central portion, the each lobes rounded at its apex. The tenth segment blackish brown, divided two plates, the margin of the plate lacerated, with hairs. Clasper two-segmented; the basal segment blackish brown, cylindrical, with long bristles; the second segment thin, three times of the length of the basal one; the each lobes acuted at its apex.

Measurement: Holotype, body 4.2mm, anterior wing 5.5mm, posterior wing 4.0mm.

Holotype: Male (M. 2085) in alcohol; Higo-no-sawa, Tanzawa Mountain mass, Kanagawa Prefecture; May 24, 1968; collected by M. Kobayashi.

This species closely *M. parvula* in color and size of the body, but is distinguished from the latter by the structure of the male genitalia and the venation of the both wings.

The present species is the third record of the genus *Morpsyche* from Japan.

The specific name *higoana* given to this species was taken from the name of the locality.

6. *Micrasema genjiroensis* sp. nov. (Plate 6)

Head blackish brown, with three pair elongate warts; anterior warts egg-shaped, the posterior warts crescent-shaped, posterolaterad warts long. Ocelli absent. Antennae ochreous, stout, slightly shorter than the anterior wing, clothed with blackish brown hairs, the basal segment stouter and longer than the remaining segments, as long as head. Maxillary palpi ochreous, three-segmented, clothed with blackish brown hairs, forming a mask lying close to the face; the basal segment much shorter than the other segments; the terminal segment slightly longer than the second one. Labial palpi ochreous, stout, clothed with blackish brown hairs, three-segmented; the basal segment as long as the second one; the terminal segment slightly longer than the second one.

Dorsum of thorax blackish brown; pronotum with two pair of ochreous warts; warts egg-shaped; the lateral warts larger than the dorsal warts; mesoscutum with a pair of elongate warts.

Legs ochreous; tibia and tarsus clothed with blackish brown hairs; spurs 2, 2, 2.

Spurs short, ochreous; tibia and tarsus with spines; mesopleuron and coxa with warts. warts of mesopleuron egg-shaped, clothed with long bristles; warts of coxa elongate, with long bristles; claw each legs developed.

Anterior wing gray, densely pubescent, broad; apical forks nos. 2, 3 and 4 present; apical forks nos. 2 and 5 with footstalks; discoidal cell closed by the normal vein and a hyaline vein; *r-m* and apical portion of *arc* hyalined.

Posterior wing gray, pubescent, basal portion as wide as width of the apical portion; discoidal cell absent; apical forks nos. 1 and 5 present, each forks with long footstalks.

Tergite blackish brown, with long bristles; sternite pale brown, clothed with hairs; pleurite flesh color. The tenth segment blackish brown, clothed with black hairs, divided in to two plates in the lateral view, each plates nearly triangular in the dorsal view. Clasper blackish brown, divided two lobes; the lower lobe thicker and longer than the upper lobes, fang-shaped in the dorsal view, with long bristles. Upper penis cover broad, dorsum with short bristles, rounded at its apex. Penis thick, long triangular in the lateral view.

Measurement: Holotype, body 4.5mm, anterior wing 5.5mm, posterior wing 4.5 mm.

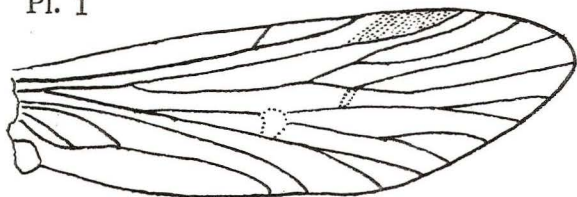
Holotyp: Male (M. 2108) in alcohol; Genjiro-no-sawa, Tanzawa Mountain mass, Kanagawa Prefecture; May 24, 1968; collected by M. Kobayashi.

Paratype: Seven Males (M. 2081, 2084, 2108a, 2078, 2109, 2114, 2116) in alcohol; Genjiro-no-sawa, Tanzawa Mountain mass, Kanagawa Prefecture; May 24, 1968; collected by M. Kobayashi.

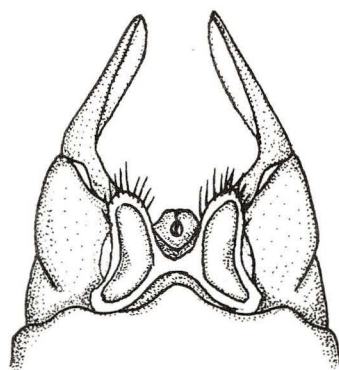
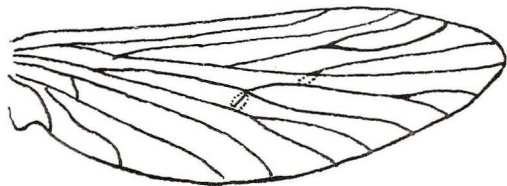
The specific name *genjiroensis* given to this species was taken from the name of the locality.

The type specimens above are deposited in the Kanagawa Prefecture Museum, Yokohama, Japan.

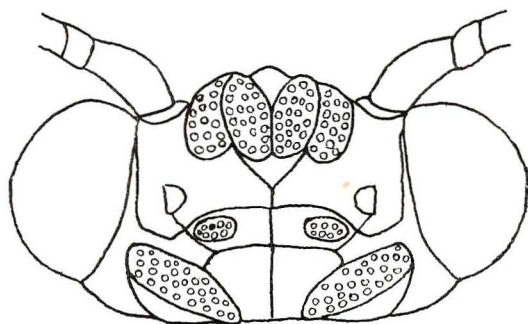
Pl. 1



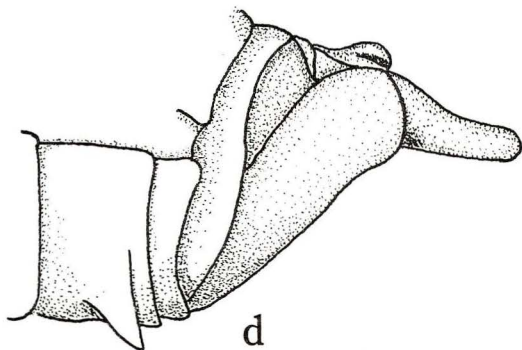
a



c



b



d



e

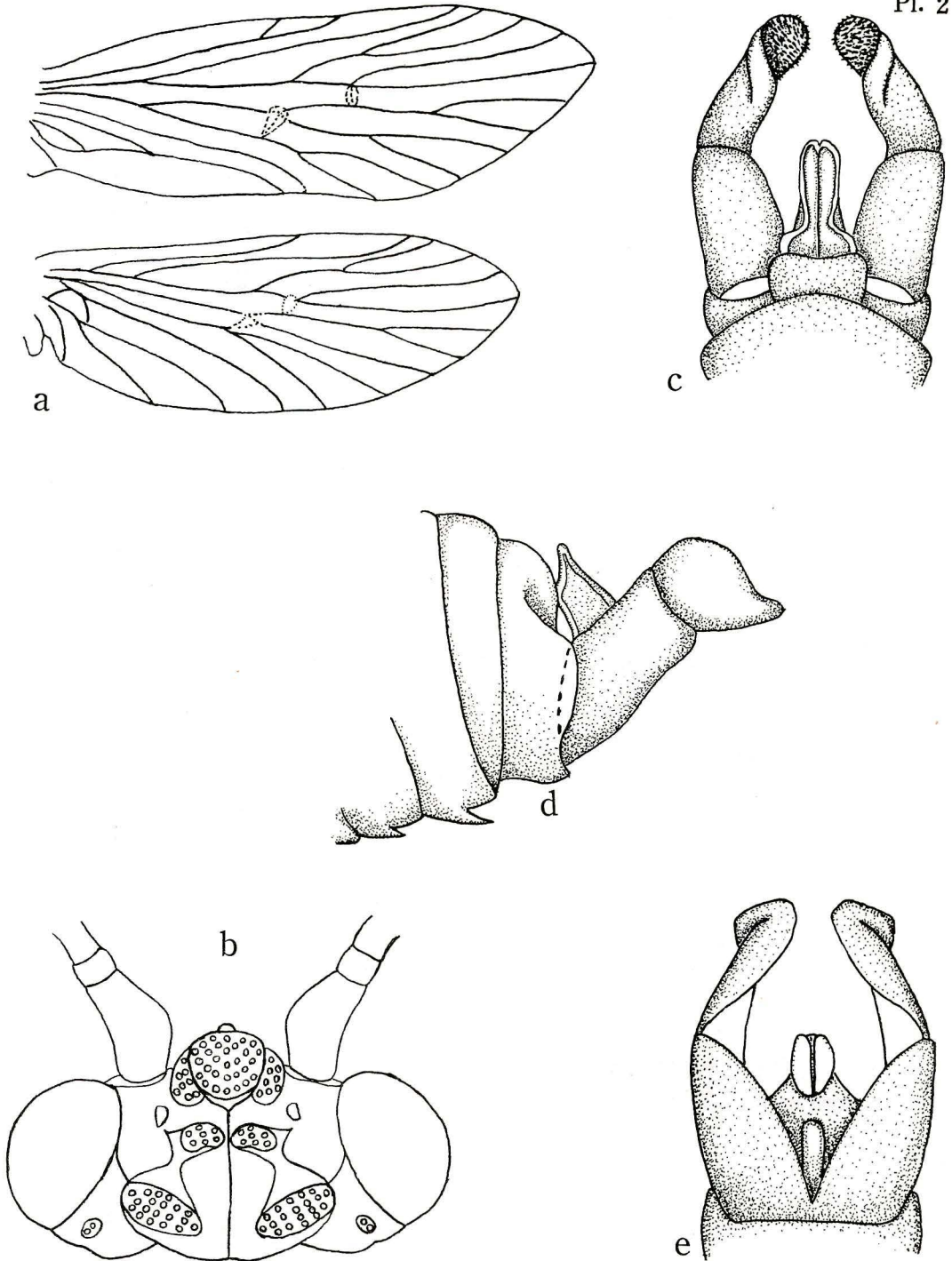
Explanation of Plate 1

Head, wings and genitalia *Rhyacophila shiraishiensis* sp. nov.

a. Wings. b. Head.

c-e. Male genitalia.

c. Dorsal view. d. Lateral view. e. Ventral view.



Explanation of Plate 2

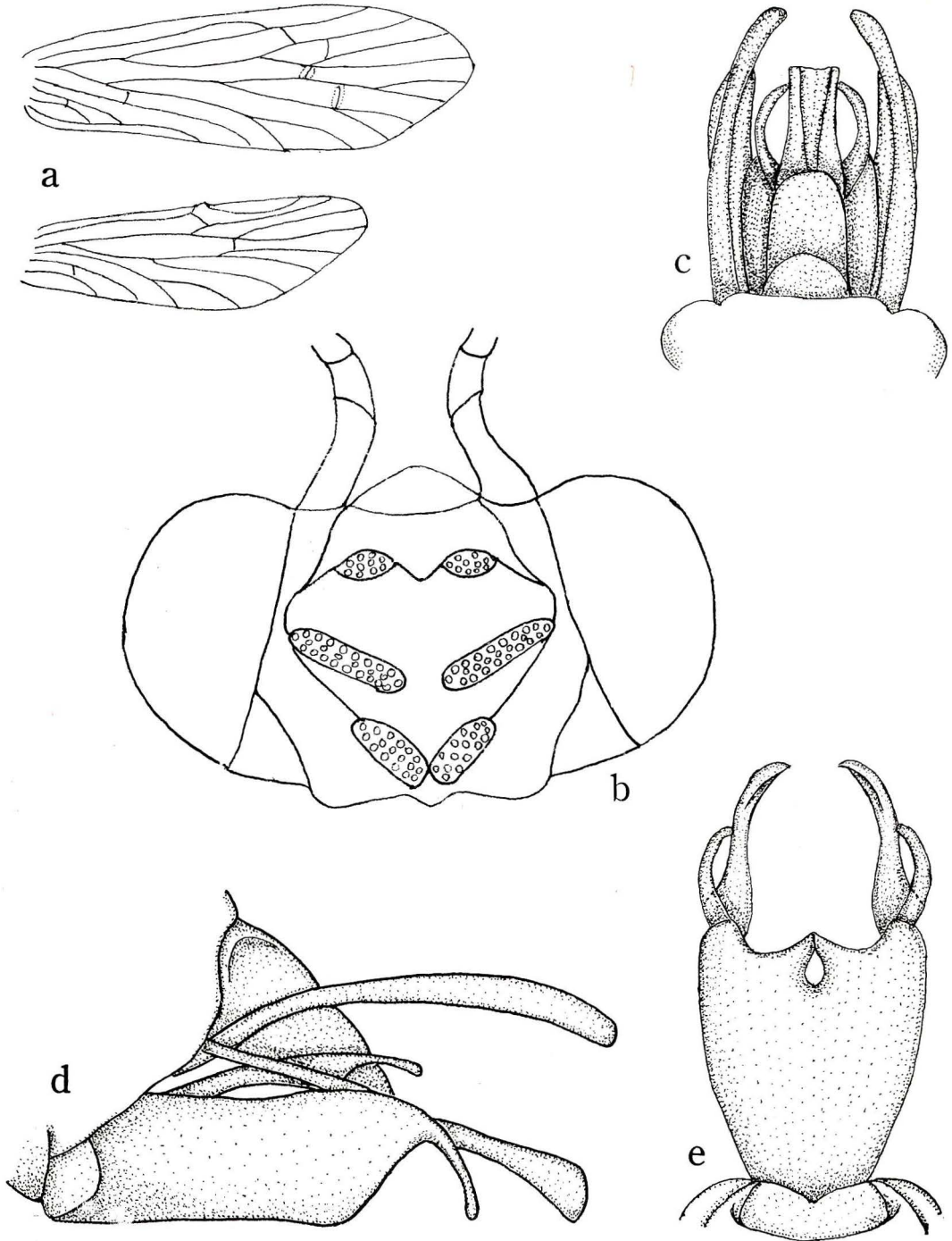
Head, wings and genitalia of *Rhyacophila morokuboensis* sp. nov.

a. Wings. b. Head.

c-e. Male genitalia.

c. Dorsal view. d. Lateral view. e. Ventral view.

Pl. 3



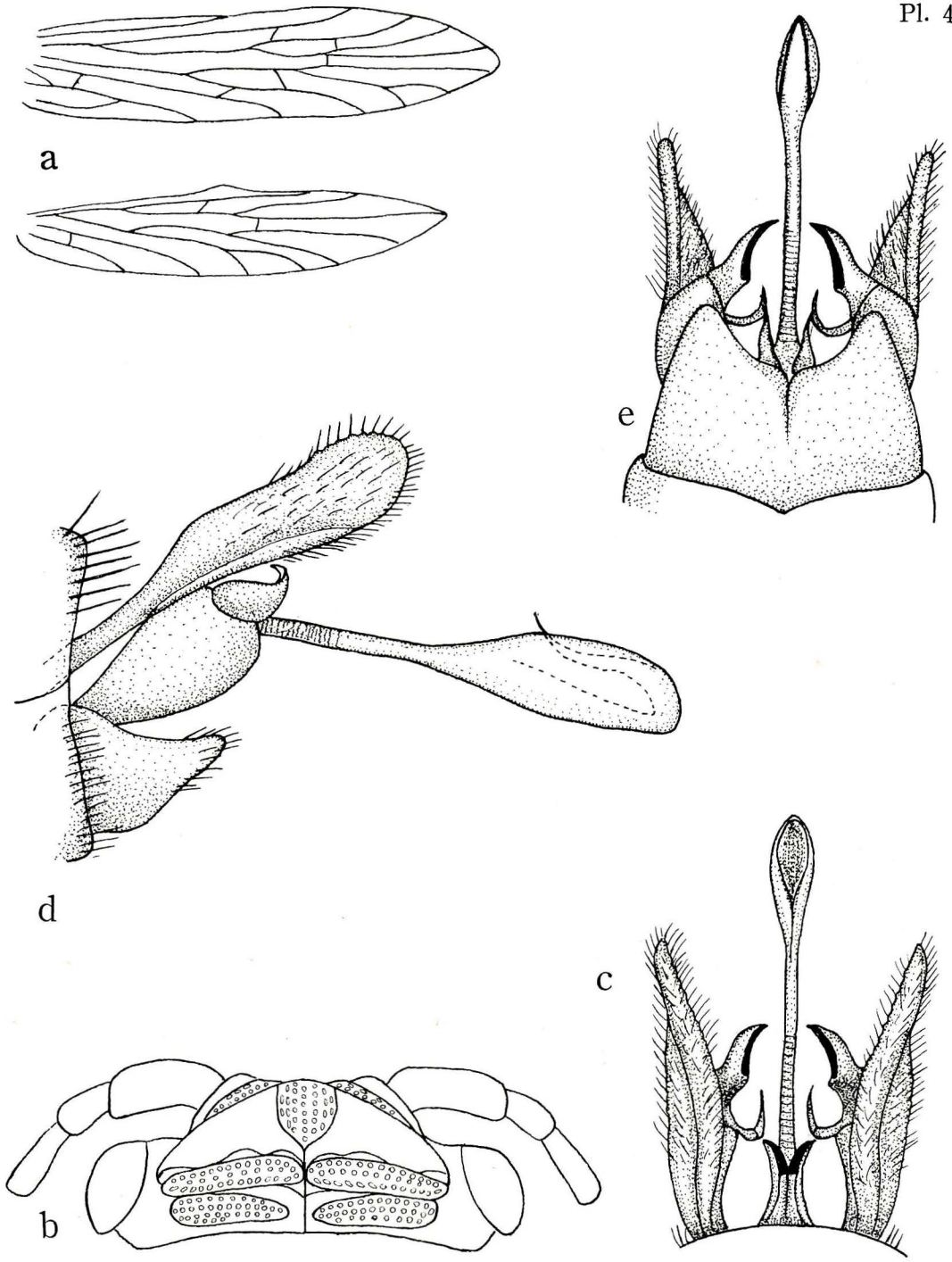
Explanation of Plate 3

Head, wings and genitalia of *Tinodes ashigaraensis* sp. nov.

a. Wings. b. Head.

c-e. Male genitalia

c. Dorsal view. d. Lateral view. e. Ventral view.



Explanation of Plate 4

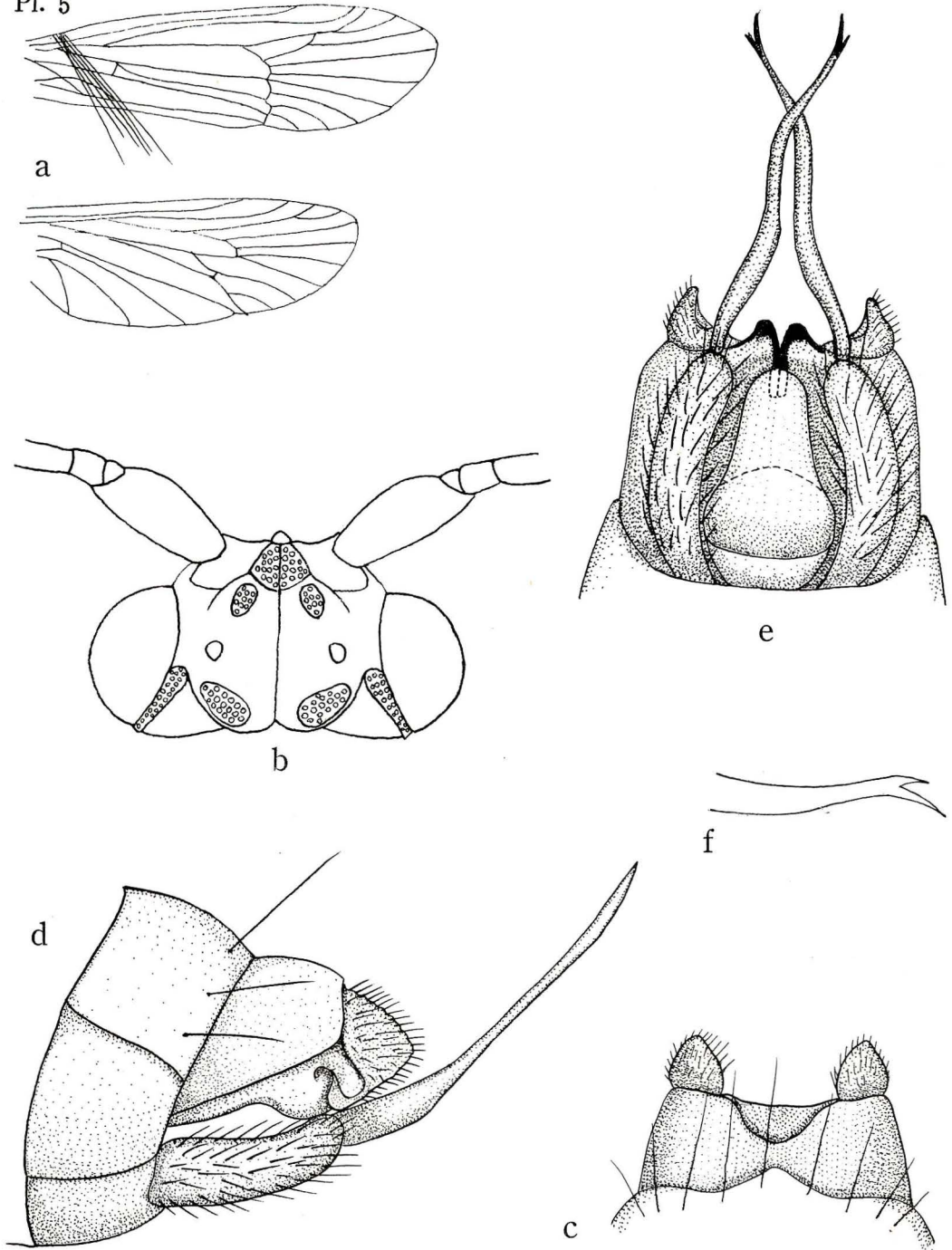
Head, wings and genitalia of *Kibuneopsychomyia tanzawaensis* sp. nov.

a. Wings. b. Head.

c-e. Male genitalia.

c. Dorsal view. d. Lateral view. e. Ventral view.

Pl. 5



Explanation of Plate 5

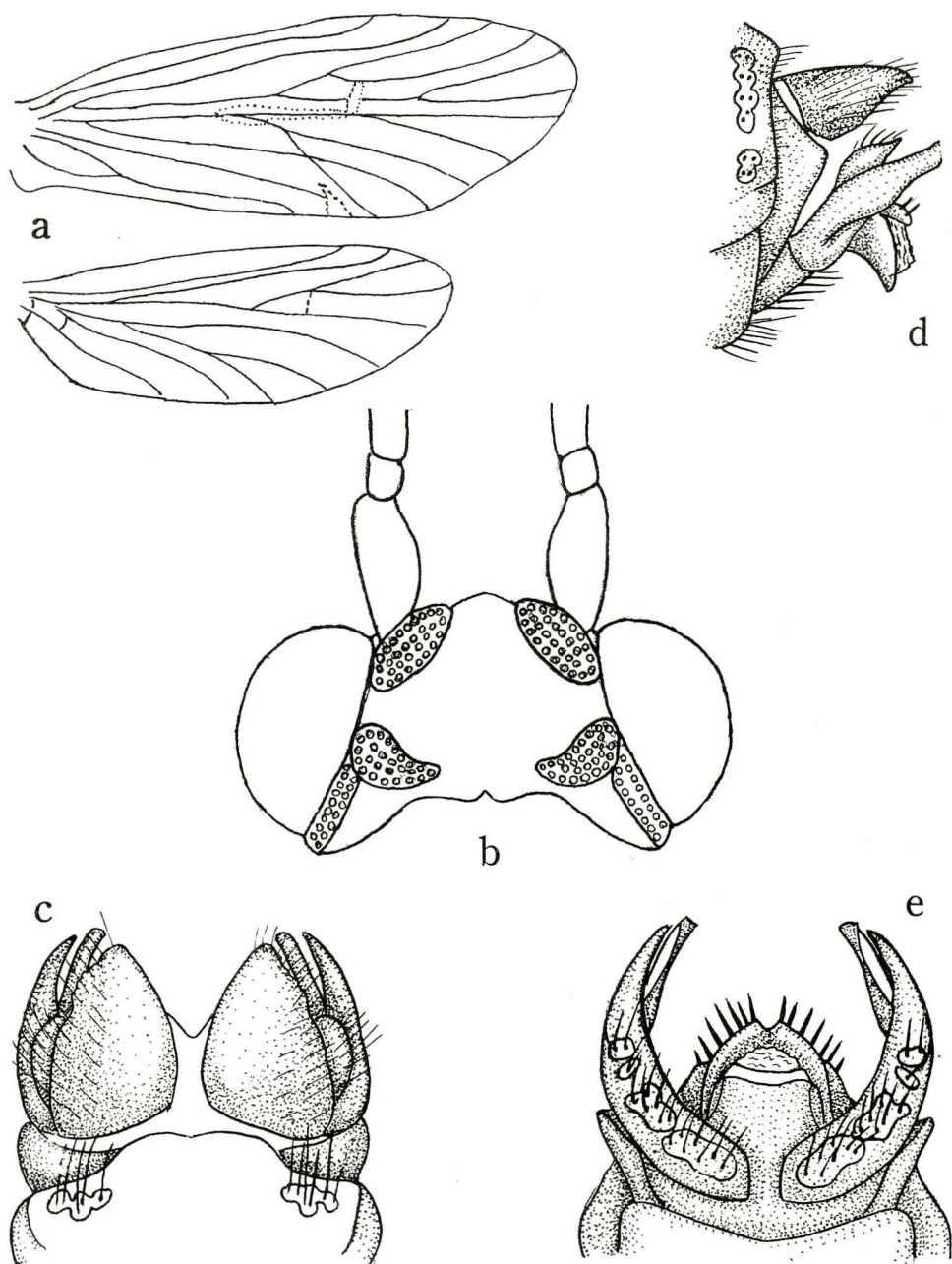
Head, wings and genitalia of *Moropsyche higoensis* sp. nov.

a. Wings. b. Head.

c-f. Male genitalia.

c. Dorsal view. d. Lateral view. e. Ventral view.

f. Apical portion of Clasper.



Explanation of Plate 6

Head, wings and genitalia of *Micrasema genjiroensis* sp. nov.

a. Wings. b. Head.

c-e. Male genitalia.

c. Dorsal view. d. Lateral view. e. Ventral view.